nurses and other health professionals immensely in identifying hazardous work environments. With training and consultation with epidemiologists, these techniques can be and should be used by most companies to detect problems (if they exist) or to demonstrate a healthy working population and to assure (through continuous monitoring) that no deterioration of health related to work occurs. Expertise in occupational epidemiology exists in several large universities in the West. Most of these academically based epidemiologists are more than willing to help interested companies or unions develop and implement these programs. It is through this kind of cooperation that problems can be anticipated and prevented. If the techniques and epidemiologic methods that currently exist are applied in many work settings, we should be able to identify causes of cancer, reduce exposures to prevent many cases of cancer from occurring and avert future epidemics of cancer caused by occupational exposure.

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Medical Practice Questions

EDITOR'S NOTE: *From time to time medical practice questions from organizations with a legitimate interest in the information are referred to the Scientific Board by the Quality Care Review Commission of the California Medical Association. The opinions offered are based on training, experience and literature reviewed by specialists. These opinions are, however, informational only and should not be interpreted as directives, instructions or policy statements.*

Human Tumor Stem Cell Assay

QUESTION:

Is a human tumor stem cell assay considered an effective technique in the treatment of cancer or is it considered investigational?

OPINION:

In the opinion of the Advisory Panels on Chest Diseases, General Surgery, Internal Medicine, Neurosurgery and Pathology, human tumor stem cell assays must be considered investigational at this time, although they appear to offer promise as a valuable in vitro test of tumor sensitivity to chemotherapeutic agents. At present, there are problems in methodology, in standardization and in interpretation of the data derived.

These assays effectively predict drug resistance, and thereby can safeguard patients from the toxic effects of drugs known to be ineffective. However, the test is limited in its ability to predict sensitivity reliably. Prospective correlative data remain scant and limited to a few tumors and drugs. Most of these data have been accumulated for ovarian carcinoma, which grows relatively well in soft agar systems, tends to be moderately responsive to chemotherapy and often has relatively accessible tumor cells in ascites fluid. The correlations may not apply to other types of tumors and may differ from drug to drug. Further, many of the published reports are retrospective, or, when prospective, are not true correlations for individual drugs since patients may be treated with combination therapy after in vitro testing of single agents.

There is as yet no controlled study that indicates that treatment selected by assay is superior to a clinician's choice or that patients' survival is significantly increased by use of the assays.

Long-term clinical studies, carried out in controlled research settings, are required to validate the reliability and clinical application of this technique. Once the methodological differences among laboratories are resolved, and better cell growth for various tumor types and more reliable end points for measuring the effects of drugs are achieved, the clinical studies needed to assess the role of this type of assay will be possible. Until such time as its clinical utility fulfills its theoretical expectations, human tumor stem cell assays merit continued investigation.